

AMENDED CLAIMS

1. (Amended) A titanium-made plate-type heat exchanger
5 comprising flow paths of a first fluid and flow paths of a second fluid
alternately arranged such that heat can be exchanged between the two fluids,
said respective flow paths comprising:

a titanium-made flat container having an inlet of one of the fluids
formed on one end and an outlet of the fluid formed on the other end, and

10 an offset-type titanium plate fin accommodated in said flat container
and connected to the inner side of said container via top ends of concave strips
of said titanium plate fin so as to form a plane to plane connection, wherein:

said titanium plate fin and said titanium plates are connected by a
Ti-Zr type brazing solder, which melts under 880°C, containing 20 to 40 wt.%
15 of titanium and 20 to 40 wt.% of zirconium.

2. (Amended) A production method of a titanium-made plate-type
heat exchanger comprising flow paths of a first fluid and flow paths of a
second fluid alternately arranged such that heat can be exchanged between
the two fluids, said production method for forming said flow paths by
20 connecting a titanium-made flat container having an inlet of one of the fluids
formed on one end and an outlet of the fluid formed on the other end to an
offset-type titanium plate fin accommodated in said flat container and
connected to the inner side of said container via top ends of concave strips of
said titanium plate fin so as to form a plane to plane connection, comprising
25 steps of:

coating a Ti-Zr type brazing solder, which melts under 880°C,
containing 20 to 40 wt.% of titanium and 20 to 40 wt.% of zirconium, over
positions to be connected of said constituting members; and

heating said brazing solder coated constituting members under 880°C
30 in an vacuum and/or inert gas atmosphere.

SUPPRTING STATEMENT UNDER ARTICLE 19(i)

1. In the amended claims 1 and 2, the connection between the
5 titanium flat container and the titanium plate fin by the brazing solder is more clearly specified as "plane to plane connection".

In the cited reference JP2002-35929, since a plurality of herringbone plates 4 are layered such that herringbone patterns on the plates are alternately arranged in the opposite directions each other and peripheral
10 portions are brazed, two neighboring plates are contacted on concave edge points which form merely "point to point connection". Consequently, pressure the resistant performance of fluid flow paths formed by respective plates 4 is poor.

According to the present invention, since the flat container and the
15 titanium plate fin are connected via the plane to plane connection, the pressure resistant performance of the fluid flow paths is improved.

2. Claims 1 and 2 are amended in order to specify one of the features characterized by that flow paths of the first fluid and flow paths of the second fluid alternately arranged and both flow paths are constituted by
20 the titanium-made container and the titanium plate fin therein.

The heat exchanger disclosed in the cited reference JP2001-174169 is formed by layering tubes as flow paths for the first fluid and heat exchanging cores as flow paths for the second fluid. Fins are formed inside the cores, but no fins are formed in the tubes. As a result, the heat radiating performance of
25 the fluid in the heat exchanging core is excellent, but that of the fluid in the tube is poor so that the heat exchange efficiency between the two fluids is not so good.

According to the present invention, since the flow path of the first fluid and the flow path of the second fluid are constituted by the titanium-made flat
30 container and the fins therein, heat transfer areas in both flow paths are enlarged so that the heat exchange efficiency is improved.